

Excellent supply chain management

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Abstract

Purpose – The purpose of this paper is to review the fundamental concept of supply chain management (SCM) and discusses the facts that a road to success in the process of design, development, implementation and operation of a supply chain (SC) is the identification of superior strategies and clear objectives. To understand important SC strategies for a complete success, main strategies need to be identified. The literature of SC is filled with a wide range of strategies applied successfully across various enterprises that reviewed briefly in this paper.

Design/methodology/approach – The paper provides key strategies of SCM, and discusses the fact that the vision for the excellent SCM can be built on principles as such as speed, quality, cost, flexibility, quality leadership, customer focused, collaboration, and integrated information system.

Findings – To make the excellent SCM successful, management must be committed to high standard of performance including competitive lead times to customers, significantly reduced inventories, world-class product quality, and reduced process and product complexity.

Originality/value – Because a better management of production system is related to the full understanding of the technologies implemented and the system under consideration, the excellent SCM system including its three As are discussed and metrics used to measure performance are elaborated.

Keywords Supply chain management, Channel relationships, Competitive strategy

Paper type Research paper

1. Introduction

de Toni and Nassimbeni (1999) have characterized supply chain management (SCM) by four elements: a large supply base, short-term relationships, low-price bidding, and low flexibility. Council of Logistics Management (2000) defines SCM as a systemic coordination of the traditional business functions and tactics across these business functions within a particular organization and across businesses within the SC for the purposes of improving the long-term performance of the individual organizations and the SC as a whole. Currently, manufacturers have realized the potential benefits of the supplier partnership – a mutual, ongoing relationship that involves a high level of trust, commitment over time, and long-term contracts (Scannell *et al.*, 2000). SCM is a research area attracted the attention of many researchers from the academicians, consultants, and business managers, over the last two decades. It is concerned with cost-effective way of managing materials, information and financial flows from the point of origin to the point of consumption to satisfy customer requirements (Narasimha Kamath and Roy, 2007). An important point to be taken into consideration in the designing stage of the SC is the decision made regarding the initial SC capacity.

Supply-chain (SC) excellence is the key to gaining competitive advantages. To arrive at, companies have been trying to reduce costs, increase customer responsiveness, and

optimize asset utilization. Such efforts do not always work well. This is because there may be little link between the competitive strategies of these companies and their SC processes, operations and practices. Many managers had argued that SC demonstrates the single most important business process leading to improved customer service, reduced cycle times, and enhance profitability. Most organizations have a good SC vision, yet struggle to find the most cost-effective means to achieve and sustain it.

Recently, the most important work a company can do is to fully understand and advance its SC contribution. Strategic sourcing and logistics are key enablers for achieving lowest total-cost producer status. By defining customer's wants and needs, and trying with accomplishing them, the organization's SC represents a complex array of business processes, decisions, and resource commitments, unsurpassed by any other dimension of the organization.

In this paper, two types of SCs namely:

- 1 typical SC; and
- 2 excellent supply chain (ESC) are recognized.

Typical SC is what also known as SC while ESC needs to be discussed in more details. The objectives of this paper are three fold:

- 1 to provide a brief review of SC strategies;
- 2 to develop a description of ESCM with its three As that can help organizations to add values to their business in a constructive manner; and
- 3 with regard to ESCM review the performance measurement and metrics used in SCM.

The remainder of this paper is arranged as follows. Section 2 presents the typical SC strategies and discusses each subject separately. Characteristics of ESC are discussed in Section 3. The three As of ESC is discussed in Section 4. SC performance and metrics are discussed in Section 5.

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Section 6 discusses managerial implications. The topic of Section 7 is discussion and conclusion.

2. SC and its related strategies

SCM is defined (Simchi-Levi *et al.*, 2004) as a set of approaches used to efficiently integrate suppliers, manufacturers, warehouses, and stores so that merchandise is produced and distributed at the right quantities, to the right locations, and at the right time in order to minimize system wide costs while satisfying service-level requirements. SCM is widely used by companies to improve their ability level with the objective of being flexible and responsive to meet changing market requirements (Gunasekaran *et al.*, 2004).

Wal-Mart, a successful US-based company had planned to open an average of one new store a day in 2003 while its competitor K-Mart was trying to emerge from bankruptcy and closing hundreds of stores (Verespej, 2005). Dell Computer contributed 25.2 percent to the overall growth of the computer industry market in the fourth quarter of 2002 while all its competitors contributed only 0.5 percent (Archer, 2003) all together. The question that must be asked is: how are these companies able to overcome tough economic conditions and outperform their competitors? The answer is in their efficient SCM.

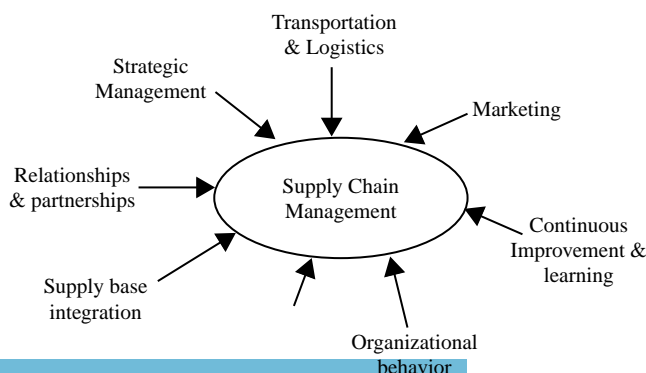
In many cases, SCM is a key in making profit while in other cases it is a matter of survival and presence in the market. Companies considered to be the best in the class for their SC performance must be able to operate their network efficiently at 4-7 percent of revenue less than the average company in their industry (Center for Science, Technology and Economic Development, 2000). Therefore, a company having an earning of US\$300 million a year, this difference results in a US \$12-21 million cost advantage every year (Center for Science, Technology and Economic Development, 2000).

Figure 1 shows eight principal components of SC. Of the most valuable to this study are strategic management, practices, and performance components. Many researchers have discussed the topic of SC strategies (Bechtel and Jayaram, 1997; Gunasekaran, 1999; Min and Mentzer, 2004; Tan *et al.*, 2002). We will briefly discuss the key strategies of SC as are the most valued to the chain system.

Main strategies used with SCM are:

- Competitive strategy.
- Product development strategy.

Figure 1 SC main components



Source: Robinson and Malhotra (2005)

- Marketing and sale strategy.
- SC strategy.
- Strategic fit.
- Global freight management strategy.
- Customer focus strategy.
- Strategic sourcing.

2.1 Competitive strategy

This strategy defines the set of customer needs that it seeks to satisfy through its products and services. Wal-Mart, a successful American retailer enterprise is an example of a SC that aims to provide a large amount of every product that are of customer's needs with low prices and acceptable quality in mind. When people go to Wal-Mart they know that the product that they need is in the shelf and it is priced right in a competitive manner with the quality that can be taken home satisfactorily. Competitive strategy targets one or more customer segments and aims to provide products and services that will satisfy these customers' needs.

2.2 Product development strategy

With this strategy in mind, management proposes a portfolio of the new products that company is going to develop. This strategy also indicates that the company is going to produce such products internally or through outsourcing. In the USA, successful food and retail SC systems such as Wal-Mart, Safeway, and Shaw's produce a number of products and offer at a lower price for promotional purposes. This is a successful strategy because such products are priced about 15 percent lower than the brand name products and management can use them as a driving tool for attracting customers to its store.

2.3 Marketing and sale strategy

This strategy specifies how market should be segmented, for what product, at what price and how should be promoted. Dell's strategies of direct sales and build-to-order production have been successful in minimizing inventory and bringing new products to market quickly (Schniederjans, 2002).

2.4 Supply chain strategy

The nature of procurement raw materials, transportation of material to and from the company, manufacture of the product or operations to provide the service, and distribution of the product to the customer are determined by the SC strategy.

Decisions made regarding inventory, transportation, operating facilities, and information flows in the SC are all part of SC strategy.

2.5 Strategic fit

The meaning of this strategy is that both competitive and SC strategies have the same goal. There are three basic steps for achieving strategic fits:

- 1 Customer understanding.
- 2 SC understanding.
- 3 Achieving strategic fits.

2.6 Global freight management strategy

A major producer needed to improve management, cost, and service in its exporting operations. To do so, a freight strategic management development approach having following components was designed:

- received senior management's approval;
- lead to improved customer responsiveness;

- identified and selected appropriate third party providers;
- positioned measurable cost reductions of 5-10 percent; and
- completed in three months.

2.7 Customer focus strategy

A customer-focused strategy for an electronic retailer company such as Best Buy requires high inventory and significant costs for customer interaction. That strategy is very different from a cost-minimizing model such as Wal-Mart's. Both SCs are excellent, but competitive strategy will determine the operational metrics that are appropriate for any given organization.

2.8 Strategic sourcing

Strategic sourcing is less about finding the lowest cost supplier and more about aligning (Shah *et al.*, 2002) sources and supply allocation decisions with the needs of the business.

3. Excellent supply chain

An SC is a series of units that transforms raw materials into finished products and delivers the products to customers (Mabert and Venkataramanan, 1998). In today's world market, the dependency of organizations on one another has caused the optimal decision of one organization cannot bring the required level of success to organization alone. This success is affected by the success of all upstream and downstream organizations and the entire SC. It is seen today that a new form of competition is shaped up and now it is the war of one SC against the one of the competitor instead of the "firm versus firm" (Boyer and Lewis, 2002; Cleveland *et al.*, 1989). Leading companies with effective SCs such as Wal-Mart, Dell and Toyota insist on the use of their SCs as a weapon to go forward and gain advantages over their competitors.

In a struggle for marketplace advantage, organizations as well as practitioners have tried to find a new way for taking lead in the competition. To do so, it is noticed that having a brand new SC by itself would not put the company in the lead. It is necessary to look into solutions that can find the way to the top. Getting successful in managing SC involves challenges such as developing trust and collaboration among SC members. Well-established companies with effective SC systems such as Wal-Mart and Dell computer companies have integrated their SC to make efficient use of information and technologies (Hult *et al.*, 2004; Lee, 2000). Business excellence model for SCM is studied by Kanji and Wong (1999) and achieving SCM excellence was studied by Wong (2003). Table I lists excellence in SCM as it goes with these two well known companies. The considerations are on six functions of inventory management, supplier management, production management, information management, technology management and quality management. Wal-Mart and Dell companies have integrated their SCs to make efficient use of information and technologies while orchestrating all activities of the chain (Kinsella, 2003). Satisfying final customers can only be achieved when the whole chain commits, integrates, and coordinates to pursue coherent and innovative practices (Simchi-Levi *et al.*, 2004).

Competitive advantage is the extent to which an organization is able to create a defensible position over its competitors (McGinnis and Vallopra, 1999; Porter, 1985).

It is clearly shown in the literature that price/cost, quality, delivery, and flexibility are important competitive capabilities (Tracey *et al.*, 1999; Roth and Miller, 1990; Skinner, 1985). In Tu *et al.* (2001), time-based competition was also proposed as an important competitive priority. Other researchers, Kessler and Chakrabarti (1996), Vesey (1991), Stalk (1988) and Balsmeier and Voisin (1996), have identified time as the next source of competitive advantage. Following above works, Koufteros *et al.* (1997) identified five dimensions of competitive pricing, premium pricing, value-to-customer quality, dependable delivery, and production innovation in his research framework. These dimensions are also described by Tracey *et al.* (1999), Roth and Miller (1990), Cleveland *et al.* (1989), Rondeau *et al.* (2000) and Vickery *et al.* (1999).

Organizational performance refers to how an organization achieves its market-oriented goals as well as its financial goals (Yamin *et al.*, 1999). In the short term, management of SCs is concerned about the productivity increase and inventory reduction and cycle time while on the long term, they follow the objectives of increasing market shares and profits for all members of the SC (Tan *et al.*, 1998). Some researchers have studied the organizational performance through return on investment, market share, profit margin on sales, the growth of ROI, the growth of sales, the growth of market share, and the overall competitive position (Vickery *et al.*, 1999; Stock *et al.*, 2000).

Hence, in addition to strategies discussed in Section 2, we need to add new strategies that are mostly suitable for systems in search of higher values for their customers and their own businesses. These strategies are:

- enhancing performance; and
- timely strategic decisions.

Performance enhancement is mainly associated with following objectives:

- minimizing costs;
- maximizing speed;
- maximizing chain flexibility; and
- optimizing quality;

The "timely strategic decisions" is related to the employment of technologies as such as internet and RFID technology in making following objectives achievable:

- automatic data collection;
- online data analysis; and
- on time decision making;

Therefore, the ESC uses strategic SCM to excel across speed, quality, cost, flexibility (Keltchen and Hult, 2007; Keltchen *et al.*, 2008) and making the automatic data collection and on time decision making possible.

4. The three As

The three As of ESC are: agility, adaptability, and alignment (Lee, 2004). The effectiveness of strategic SCM is closely related to these three attributes.

4.1 Agility

Agility refers to the ability of a SC to react quickly to unexpected or rapid shifts in SC and demand (Lee, 2004). Therefore, agility can be achieved using inventory, excess capacity, and management of information systems. These all can generate buffers and hence produce higher ability and

Table I Excellence in SCM

	Dell Computer	Wal-Mart
Inventory management	Dell manufactures more than 50,000 computers every day, but carries only four days of inventory (competition carries 20-30 days)	Wal-Mart uses cross-docking and hub-and-spoke distributions centers to eliminate unnecessary handling and storage of product while targeting a large geographical area
Supplier management	Only about 30 Dell suppliers provide 75 percent of direct material purchased. If supplier levels exceed ten days, Dell works with the supplier to lower inventory	Wal-Mart gives better payment terms to suppliers for their use of electronic ordering and information sharing between Wal-Mart and the supplier (e.g. Proctor & Gamble)
Production management	Dell took a make-to-stock industry and shifted it to make-to-order	Wal-Mart initiated the practice of "everyday low prices" in which there is no need for weekly sales or special promotions
Information management	More than 50,000 orders come through the internet. Dell's legacy order management system records all the orders and releases them to manufacturing. Production lines are scheduled every 2 h	Wal-Mart launched its own satellite creating a communication network to monitor orders and shipments with all stores and suppliers ensuring the quality of data
Technology management	Technology in Dell's SC process provides efficiencies, immediate communication with suppliers and improved operations internally	Wal-Mart issued a RFID technology mandate to the top 100 suppliers by 2005
Quality management	To address quality issues Dell launched the Critical Supplier Partnership Program resulting in improvement in quality metrics and continuity of supply	Wal-Mart achieves a very high degree of quality with respect to loading pallets and merchandise in correct condition on its trucks. High-quality procedures minimize loss or damage during material handling within the warehouses and during transportation

Sources: Jacobs (2003), Moore (1993) and Robinson and Malhotra (2005)

capability for the organization to react fast and response swiftly. Owing to the fact that in ESC we are in need of minimizing cost and maximizing values therefore excess buffering as a goal of organization would put management at the edge of dealing with a bi-criterion type problem of:

```
{ Minimizing cost
  Optimize excess capacity
St:
  Systems constraints
}
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More precisely, management must overcome the fact that the developed model is a multi-criterion type problem structured as:

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{ Minimizing cost
  Maximizing speed
  Maximizing values (Banfield, 1999; Donlon, 1996)
  Maximizing the flexibility of the chain
  Maximizing quality
  Optimizing excess capacity
St:
  Systems Constraints
}
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All these need to be done in a way that the performance of the organization does not suffer and it stands at its higher level of functionality.

There are other ways to generate agility in the SC. One such method is through co-locating with the customer. This arrangement creates an information flow that cannot be duplicated through other methods (Keltchen *et al.*, 2008). Another way is through the use of new technologies such as RFID to collect data automatically and develop information systems to make the whole organization proactive rather reactive to the

needs of customers. The third approach is through increasing data accuracy both in terms of data collection from the organization sub-systems and data management related to the passing of goods to customers. RFID (Hou and Huang, 2006; Tajima, 2007) could improve inventory records by reducing human errors in material handling. RFID could also increase the accuracy of shipment data, which could, in turn, improve demand forecast and production planning. The agile-enabling technologies such as internet, multimedia, EDI, electronic commerce, flexible manufacturing cells, robotics and CAD/CAM need to be suitably incorporated within the scope of the VE to achieve agility in manufacturing (Gunasekaran, 1999). Such agile-enabling technologies along with RFID can bring a high degree of agility, flexibility, automation, and on time decision making to the entire parts of the SC.

4.2 Adaptability

Adaptability refers to a willingness to reshape SCs when necessary, without ties to legacy issues or the way the chain has been operated previously (Lee, 2004). The fact that cost minimization, for a chain to act like an ESC, is in order the creation of a single SC for a customer would be optimal. This may not always be possible for an adaptable organization to reach at a best value. Therefore, alternative approaches are in order. Adaptable SCs rely on information systems to identify shifts in the market, and then take appropriate actions such as moving facilities, changing suppliers, and outsourcing (Lee, 2004). Hence, adaptability may come with high-expense tag that requires executives willing to accept and lead management to do their tasks. Radjou (2003) has discussed a process of transforming static SCs into an adaptive supply networks.

4.3 Alignment

Alignment refers to ensuring that the interests of all participants in a SC are consistent (Lee, 2004). There are

some approaches to follow to make alignment in the interests of all participants. Some may cooperate to add statements to the contract that would benefit both sides of the deal. Others work together in a collaborative manner to reach into a good forecasting of the situations to clearly determine what would be the duty of each member to reach to the level of interest attractive for entire members. Sitting side by side, talking in clear statements and with timely and accurate numbers would put all in the right track for reaching to their goals. Researchers Narayanan and Raman (2004) and Shah *et al.* (2002) have discussed on aligning SCM characteristics and inter-organizational information system types.

5. Performance measurements and metrics in SCM

An organization should be committed to managing its SC in a way of improving customer satisfaction and profiting the partners in the value chain. They must be committed to a consistent and high standard of performance. ESC can have four characteristics as listed below:

- 1 Support and enhance the strategy of the business.
- 2 ESCs are based on a complementary operating model that creates competitive advantage.
- 3 Emphasize high-performance execution, where performance is measured by a balanced set of business-relevant objectives or metrics.
- 4 ESCs control a tailored set of business practices.

A number of researchers have studied SC performance (Brewer and Speh, 2000; Forker *et al.*, 1997; Gunasekaran *et al.*, 2001; Johnson and Davis, 1998; Lapide, 2000; Lin *et al.*, 2002; Yamin *et al.*, 1999; van Hoek, 1998; Brewer and Speh, 2000) proposed the use of balance scorecard for measuring SC performance. Gunasekaran *et al.* (2001) have a list of key SCM performance metrics that are broken into strategic, tactical, and operational levels. Besides that, each of these cases are divided into financial and non-financial situations as are listed in Table II.

Metrics and measures are also used in the context of following activities and processes of SC:

- plan;
- source; and
- make/assemble, and delivery/customer (Stewart, 1995; Gunasekaran *et al.*, 2001).

Table III shows the ratings strategic planning metrics based on a study made by Gunasekaran *et al.* (2004) using 150 questionnaires.

In a study conducted by Otto and Kotzab (2003) six perspective to measure the performance of managing a SC were taken into consideration. Table IV shows the perspectives, and the metrics used to measure the performance of SC.

6. Managerial implications

A strong SC enables the member companies to align themselves with each other and to coordinate their continuous improvement efforts. This amalgamation enables even small firms to participate in the results of lean efforts. Competitive advantage and leadership in the global marketplace can only be gained by applying lean principles to the SC. Therefore, commitment, planning, collaboration, and a path forward are required.

Table II A list of key SCM performance metrics

Level	Performance metrics	Financial	Non-financial
Strategic	Total cash-flow time		X
	Rate of return on investment	X	
	Flexibility to meet particular customer needs		X
	Delivery lead time		X
	Total cycle time		X
	Buyer-supplier partnership level	X	
	Customer query time		X
Tactical	Extent of co-operation to improve quality		X
	Total transportation cost		X
	Truthfulness of demand		X
	Predictability/forecasting methods		X
	Product development cycle time		X
	Operational	Manufacturing cost	X
Capacity utilization			X
Information carrying cost		X	
Inventory carrying cost		X	

Source: Gunasekaran *et al.* (2001)

Table III Ratings strategic planning metrics

Assessment	Strategic performance metrics	Percentage importance
Highly important	Level of customer perceived value of product	16.42
	Variances against budget	14.23
Moderately important	Order lead time	13.50
	Information-processing cost	12.68
	Net profit vs productivity ratio	12.46
	Total cycle time	11.80
	Total cash-flow time	10.27
Less important	Level of energy utilization	8.64

Source: Gunasekaran *et al.* (2004)

Table IV Perspectives and metrics

Perspectives	Performance Metrics
System dynamics	Capacity utilization, stock out, time lags
Operations research	Service level, time to deliver, logistics costs per unit
Logistics	Lead time, order cycle time, inventory level, flexibility
Marketing	Customer satisfaction, distribution costs per unit, market share/channel costs
Organization Strategy	Transaction costs, time to network, flexibility Time to network, time to market, ROI of focal organization

Source: Otto and Kotzab (2003)

There are ways to define an outstanding SC. However, AMR Research (www.esourcingforum.com/archives/2007/08/08/25-best-run-global-supply-chains/), the Boston-based technology research firm precisely uses a formula – to do so. The latest report on the world’s best-run SCs ranked from 1 to 25 based on a weighted total score are reported where top ten of them are provided in Table V.

SC pitfalls are mostly related to poor planning, investment in unsounded technology, lack of automation system, late delivery, cost rises, quality plummets, low productivity, and weak performance. www.SCDigest.com have given a list of

Table V World’s best-run SCs ranked from 1 to 25 based on a weighted total score

Number	Name of company	Description
1	Nokia	As a pioneer in value chain strategy, Nokia has led in supplier development, S&OP, and collaborative product development
2	Apple	Apple’s unparalleled demand-shaping capability lets its SC record spectacular results without sweating costs like everyone else
3	Procter & Gamble	By swallowing Gillette, P&G proved that a dominant, demand-driven value chain creates lasting corporate power
4	IBM	IBM, which has led the demand-driven revolution within its own manufacturing, has been instrumental in the use of IT for many other top 25 companies
5	Toyota Motor	Becoming the world’s No. 1 automaker through lean manufacturing, Toyota has closed the chapter forever on Henry Ford’s twentieth century model T philosophy of “any color you want as long as it’s black.”
6	Wal-Mart Stores	Wal-Mart’s leadership in SC is more than just everyday low prices – its technology investments have broken new ground in demand sensing and process design
7	Anheuser – Bush	AB demonstrates the power of downstream consumer data to the value chain
8	Tesco	Tesco innovates aggressively in store operations and beyond, positioning itself as a global power in the consolidating grocery sector
9	Best Buy	Between private-label initiatives, home service innovations, and cutting-edge experiments with in-store uses of RFID, Best Buy is a pioneer of demand-driven principles
10	Samsung Electronics	Samsung’s processes leverage technology brilliantly. With explicit CEO sponsorship, the SC organization has tremendous influence on corporate strategy

Source: www.esourcingforum.com/archives/2007/08/08/25-best-run-global-supply-chains/

ten companies with SCs that had very poor performance. This list is shown in Table VI. Regarding the wrong technology and methodology selection, CEO Robert Smith spends \$40 billion in 1980s on robots that mostly did not work, while Toyota

Table VI Name of companies with SCM difficulties

Number	Name of company	Reason for not being successful
1	Foxmeyer’s 1996 Distribution Disaster	New order management and warehouse automation systems lead to inability to ship product and failure to achieve expected savings; bankruptcy and sale of the company follow
2	GM’s Robot Mania	CEO Robert Smith spends \$40 billion in the 1980s on robots that mostly do not work, while Toyota focuses on “lean” and cleans up
3	The WebVan Story	US\$25 million automated warehouses just make no sense given the market; company goes from billions in market gap to gone in just months in 2001
4	Adidas 1996 Warehouse Meltdown	Not well known story, Adidas cannot get a first and then second warehouse system and also its DC automation to work. Inability to ship leads to market share losses that persist for a long time
5	Denver Airport Baggage Handling System	New airport opens late in 1995 due to failure of highly automated, hugely expensive system, which never really works and is completely shuttered
6	Toys R Us.com Christmas 1999	On-line retail division cannot make Christmas delivery commitments to thousands; infamous “We’re sorry” e-mails on December 23; eventually, Amazon takes over fulfillment
7	Hershey’s Halloween Nightmare 1999	New order management and shipping systems do not start right, as Hershey cannot fulfill critical Halloween orders; \$150 million in revenue lost as stock drops 30 percent
8	Cisco’s 2001 Inventory Disaster	Lack of demand and inventory visibility as market slows leads to \$2.2 billion inventory write-off and stock price cut in half
9	Nike’s 2001 Planning System Perplexity	New planning system causes inventory and order woes, blamed for \$100 revenue miss as stock loses 20 percent
10	Aris Isotoner’s Sourcing Calamity in 1994	Then a division of Sara Lee, Isotoner decides to shut successful Manila glove/slipper plant to chase even lower costs elsewhere; costs rise, quality plummets, revenue cut by 50 percent; soon sold to Totes Inc.

Source: www.SCDigest.com

focuses on “lean” and cleans up (www.SCDigest.com). As another example of the SC pitfall is the Denver Airport baggage handling system. In 1995, the new airport opened then due to failure of highly automated and hugely expensive system used it never really worked and completely shuttered. The pitfalls and opportunities regarding the management of inventories in SCM are discussed by Lee and Billington (1992).

7. Discussion and conclusion

Leadership must fully understand SCM and the value that it can bring to the firm's bottom line. This is a very critical issue for the success of the company but it is ignored from time to time. Wal-Mart and Dell are good examples of the synergy between SCM and corporate strategy. These highly functional and operational firms see successful management of their SC at their competitive advantages. Michael Dell drives SCM excellence throughout the company while at Wal-Mart, senior executives and managers at all levels reinforce SC excellence. On the other hand, store managers understand that the key to the success of Wal-Mart lies in daily deliveries keeping products always available for customers to buy and letting promise of “always low prices” to work along.

Another key to the success of any organization is paying attention to the customer relationship management (CRM) (Stock and Lambert, 2002, 2001) in order to reduce costs and increase profitability by solidifying customer loyalty. The SC vision can be built on the following principles:

- Quality leadership.
- Customer focused.
- Driven by demand.
- Collaborative partnerships.
- Design for SC.
- Integrated information system.
- Strategic partnership and trust.

The term “Supply chain automation and collaboration” has gained attention of researchers in recent years (Verespej, 2005). Collaboration by sharing information has joined the ranks of integration and automation as a hallmark of competitive advantage in the SCs. The information to be shared is: inventory, sales, demand forecast, order status, product planning, logistics, production scheduling and, etc. Such information can be classified into three classes as: product information, customer demand and transaction information, and inventory information. During the SC design phase, a company decides how to structure the SC. In this stage, it must be decided what the chain's configuration will be and what processes each stage will perform.

Information technology plays a significant role at every stage of the SC by enabling companies to gather and analyze information. IT systems have different levels of functionality that can capture and display information, analyze it to solve short- or long-term problems. An organization can use IT systems to make strategic, planning or operational decisions within a SC. Feldmann and Müller (2003) has proposed an incentive scheme for true information providing in SCs.

A trust-based relationship (Fawcett *et al.*, 2004) between two stages of a SC includes dependability of the two stages and the ability of each stage to increase the faith. With an existence of a better relationship one can lower the transaction cost between SC stages. Cooperation and trust

within the SC help to improve performance. Researchers (Fawcett *et al.*, 2004; Handfield and Bechtel, 2002) have discussed on the role of trust and relationship structure in improving SC responsiveness.

7.1 Conclusion

The literature of SC is covered with strategies applied successful across various SC enterprises. In this study, author reviewed key strategies of typical SCM. The excellent SCM is discussed and the three As of that agility, adaptability, and alignment are briefly described. Next, performance measurements and metrics used in SCM are discussed. To make the ESCM successful, management must be committed to high standard of performance including competitive lead times to customers, significantly reduced inventories, world-class product quality, and reduced process and product complexity. An organization should be committed to managing its SC in a way of improving customer satisfaction and profiting the partners in the value chain. They must be committed to a consistent and high standard of performance. A list of key SCM performance metrics that are broken into strategic, tactical, and operational levels are provided in this study where each of these cases are further divided into financial and non-financial situations. Tables IV and V list some good examples of strong and poor SCM systems with sufficient reasons to clarify each of the cases.

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